Classroom Assessment Techniques: Finding Out What Your Students Really Know

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Student learning outcomes for today’s workshop

After attending today’s workshop, you will be able to:

1. Describe what Classroom Assessment is
2. Provide reasons for using CATs
3. Identify various CATs
4. Apply CATs to your course(s).
What is Assessment?

• “It involves systematically gathering, analyzing, and interpreting evidence to determine how well performance matches those expectations and standards; and using the resulting information to document, explain, and improve performance.”

(Source: AAHE Bulletin, Thomas A. Angelo, 1995)
What is Classroom Assessment?

"Classroom Assessment is a simple method faculty can use to collect feedback, early and often, on how well their students are learning what they are being taught. The purpose of classroom assessment is to provide faculty and students with information and insights needed to improve teaching effectiveness and learning quality."

What is **Classroom Assessment**?

• “Classroom Assessment is an approach designed to help teachers find out what students are learning in the classroom and how well they are learning it. This approach is
  • learner-centered,
  • teacher-directed,
  • mutually beneficial,
  • formative,
  • context-specific,
  • ongoing,
  • and firmly rooted in good practice.”

What is Classroom Assessment?

Teacher-directed: teacher selects, designs, administers and chooses how to respond to results

Formative: on-going during learning; diagnostic; interventions; not graded; remedial
Classroom Assessment is *not* Program Assessment

CATs are conducted by individual instructors and rarely relate to program assessment.

CATs are not formally documented.

Instructors are not assessing program SLOs, but rather more focused knowledge, skills, and attitudes from specific course contexts (readings, lectures, homework, etc).
Classroom Assessment addresses questions such as ...

• Are my students learning what I think I am teaching?

• Who is learning and who is not learning?

• What am I doing that is useful for these students?

• What am I doing that is not useful for these students?
Why Should You Use CATs?

For faculty, frequent use of CATs can:

- Provide short-term feedback about the day-to-day learning and teaching process at a time when it is still possible to make mid-course corrections.
- Provide useful information about student learning with a much lower investment of time compared to tests, papers, and other traditional means of learning assessment.

For students, frequent use of CATs can:

- Help them become better monitors of their own learning.
- Point out the need to alter study skills.
- Allow them to be as honest as possible when done anonymously.

Questions to Ask Yourself

What do you want to learn by using a CAT?

How will the feedback be helpful to you?
How do CATs compare to “Typical Testing?”

<table>
<thead>
<tr>
<th>“Typical Testing”</th>
<th>“CATs”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess Achievement</td>
<td>Feedback for Learning</td>
</tr>
<tr>
<td>Summative (one shot)</td>
<td>Formative (ongoing)</td>
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<tr>
<td>Not Anonymous</td>
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<td>Longer/Involved</td>
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<tr>
<td>Graded</td>
<td>Not Graded</td>
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Adapted from Parkland College Center for Excellence in Teaching and Learning

## Areas We Can Explore with CATs

<table>
<thead>
<tr>
<th>Areas</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background Knowledge</td>
<td>What have you learned?</td>
</tr>
<tr>
<td>Content/Material</td>
<td>What are you learning?</td>
</tr>
<tr>
<td>Process</td>
<td>How are you learning?</td>
</tr>
<tr>
<td>Application</td>
<td>How do you use it?</td>
</tr>
<tr>
<td>Barriers</td>
<td>What’s hindering you?</td>
</tr>
<tr>
<td>Study Skills</td>
<td>Do you have the tools?</td>
</tr>
<tr>
<td>Attitudes</td>
<td>What do you think?</td>
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</tbody>
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Using CATs to Assess …

Course-Related Knowledge and Skills
- Prior Knowledge, Recall, and Understanding
- Analysis and Critical Thinking
- Synthesis and Creative Thinking
- Problem Solving
- Application and Performance

Learner Attitudes, Values, and Self-Awareness
- Students’ Awareness of Their Attitudes and Values
- Students’ Self-Awareness as Learners
- Course-Related Learning and Study Skills, Strategies, and Behaviors

Learner Reactions to Instruction
- Learner Reactions to Teachers and Teaching
- Learner Reactions to Class Activities, Assignments, and Materials
Commonly Used CATs
Assessing Prior Knowledge

**Background Knowledge Probe:** short, simple questionnaires prepared by instructors for use at the beginning of a course, at the start of a new unit or lesson, or prior to introducing an important new topic.

- For fast analysis responses can be sorted into "prepared" and "not prepared" piles.
- For a detailed analysis answers can be classified into the following categories: 
  - [-1] = erroneous background knowledge; 
  - [0] = no relevant background knowledge; 
  - [+1] = some relevant background knowledge; 
  - [+2] = significant background knowledge.
- With this feedback faculty can determine the most effective starting point for a given lesson and the most appropriate level at which to begin instruction.
Assessing Prior Knowledge

Background Knowledge Probe Example: Below are two questions I would have given you either at the end of the last workshop or some time before this workshop (allowing enough time for any necessary modifications).

In response to each name, term or concept in bold print below, circle the number that best represents your current knowledge:

1. Assessment
   a) Have never heard of this
   b) Have heard of it, but don’t really know what it means
   c) Have some idea what this means, but not too clear
   d) Have a clear idea what this means and can explain it

2. Classroom Assessment
   a) Have never heard of this
   b) Have heard of it, but don’t really know what it is
   c) Have some idea what it is, but not to clear on its purpose
   d) Have a clear idea what this is and can explain how to use it
Assessing Recall

**Focused Listing**: This focuses on a single important term, name, or concept from a particular lesson or class session and directs students to list several ideas that are closely related to that “focus point.”

- Student responses can be compared to the content of your own lists.

- Focused listing can be used before, during, or after the relevant lesson. As a result, teachers can use this technique to gauge the best starting point, make midpoint corrections, and measure the class’s progress in learning one specific element of the course content.
Assessing Recall

Focused Listing Example: At the end of this workshop, participants are given 2-3 minutes to complete the following task.

Please list important characteristics of CATs.

- I would review the responses and determine where more emphasize might be needed in future workshops/lessons. For example, if only 50% of the students listed “teacher-directed” as a characteristic, I would then know that more attention must be paid to this characteristic in future workshops/communications.
Assessing Recall

Empty Outline: Students fill in an empty or partially completed outline of an in-class presentation or homework assignment within a limited amount of time.

• Student responses can be compared to those you expected, counting the number of students who agreed or disagreed with your responses for each item.

• The range of responses among students can be reviewed with a focus more on the patterns that emerge than on how well they match instructor expectations.

• With this feedback faculty can find out who well students have “caught” the important points of a lecture, reading, etc.
Assessing Recall

Empty Outline Example:

Provide 2 examples of each category of CATs.

1. Course-Related Knowledge and Skills
   a.
   b.

2. Learner Attitudes, Values, and Self-Awareness
   a.
   b.

3. Learner Reactions to Instruction
   a.
   b.

• If necessary, a short review different CATs could be done during future meetings. I could continue to use this CAT until a satisfactory number of students can fill in the outline correctly.
Assessing Understanding

**Minute Paper**: During the last few minutes of the class period, ask students to answer on a half-sheet of paper:

- “What is the most important point you learned today?”
- “What point remains least clear to you?”

- Review responses and note any useful comments.
- During the following class periods emphasize the issues illuminated by your students’ comments.

- With this feedback teachers can decide whether any mid-course corrections or changes are needed and, if so, what kinds of instructional adjustments to make.
Assessing Understanding

**Muddiest Point:** At the end of class, ask students to jot down a quick response to one question:

- "What was the muddiest point in the … [class meeting, readings, homework assignment, lecture, etc.] ?”
- Quickly read through at least half of the responses, looking for common types of muddy points. Then go back through all the responses and sort them into piles -several piles containing groups of related muddy points, and one "catch-all" pile made up of one-of-a-kind responses.

- With this feedback faculty can discover which points are most difficult for students to learn and this can guide their teaching decisions about which topics to emphasize and how much time to spend on each.
Assessing Skill in Analysis and Critical Thinking

**Categorizing Grid**: Students are given a grid containing two or three important categories along with a scrambled list of items, which students must then sort into the correct categories.

- With this feedback faculty can determine quickly whether, how, and how well students understand “what goes with what.” Students can also see if they need to revise their categorizing rules.
Assessing Skill in Analysis and Critical Thinking

Categorizing Grid Example:
Categorize the characteristics of typical testing and the corresponding characteristics of CATs.

<table>
<thead>
<tr>
<th>Indirect Methods</th>
<th>Direct Methods</th>
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Assess Achievement - Longer/Involved – Anonymous – Feedback for Learning – Graded - Formative (ongoing) – Not Anonymous - Not Graded - Summative (one shot) - Quick and Easy
Assessing Skill in Analysis and Critical Thinking

Pro and Con Grid: Students are given a grid containing two or three important categories along with a scrambled list of items, which students must then sort into the correct categories.

- Do a frequency count for the pros and cons students have listed; which points are most often mentioned? Compare the students’ grids to yours to see if they have excluded points or included extraneous points.

- This feedback provides faculty a quick overview of a class’s analysis of the pros and cons, costs and benefits, and advantages and disadvantages of an issue of mutual concern. Faculty can thus see the depth and breadth of the students’ analyses and their capacity for objectivity.
Assessing Skill in Analysis and Critical Thinking

Pro and Con Grid Example:
Make a list of the pros and cons for using CATs instead of formal tests to get feedback on student learning. Try to provide at least 3 of each.

• I would then review the lists to see if there are patterns (which points were most often correctly mentioned, while which incorrect points were included) and discuss the results with the participants at the next meeting.
Assessing Skill in Synthesis and Creative Thinking

One-Sentence Summary: Students should answer the questions “Who does what to whom, when, where, how, and why?” about a given topic, and then to synthesize those answers into a single informative, grammatical, and long summary sentence. The purpose is to require students to select only the defining features of an idea.

- This feedback allows faculty to evaluate the quality of each summary quickly and holistically and note whether students have identified the essential concepts of the class topic and their interrelationships.
Assessing Skill in Application and Performance

Directed Paraphrasing: Students are asked to write a layman’s “translation” of something they have just learned—geared to a specified individual or audience—to assess their ability to comprehend and transfer concepts.

• Separate the responses into four piles, which might be labeled “confused,” “minimal,” “adequate,” and “excellent.” Compare within and across categories.

• This feedback allows faculty to evaluate the accuracy of the paraphrase, its suitability for the intended audience, and its effectiveness in fulfilling the assigned purpose.
Assessing Skill in Application and Performance

Directed Paraphrasing Example:
Paraphrase what you have learned about reasons for using CATs. Direct your paraphrase to a colleague with no knowledge of CATs.

• I would review the submissions and look for common patterns of clarity and confusion and make any necessary enhancements to the content of the workshop.
Assessing Skill in Application and Performance

**Application Cards**: After learning about an important theory, principle, or procedure, students are asked to write down at least one real-world application for what they have just learned.

- Quickly read once through the applications and categorize them according to their quality. Pick out a broad range of examples (including both excellent and marginal/unacceptable examples) and present them to the class.

- This feedback efficiently shows faculty how well student understand the possible applications of what they have learned.
Assessing Skill in Application and Performance

**Student-Generated Test Questions**: Allow students to write test questions and model answers for specified topics, in a format consistent with course exams. This will give students the opportunity to evaluate the course topics, reflect on what they understand, and what are good test items

- Tally the types of questions students propose and look at the range of topics the questions span.
- This feedback shows faculty to assess at least three aspects of student learning. In these questions, teachers see what their students consider the most important or memorable content, what they understand as fair and useful test questions, and how well they can answer the questions they have posed.
- This also alerts faculty to when students have inaccurate expectations about upcoming tests.
To Consider When Choosing a CAT

Levels of Time and Energy Required for:

Prep: Faculty to prepare to use this CAT

In class: Students to respond to the assessment

Analysis: Faculty to analyze the data collected

Scale: Low, Medium, High
Using CATs

• If a CAT does not appeal to your intuition and professional judgment as a teacher, don’t use it.
• Don’t make Classroom Assessment into a self-inflicted chore or burden.
• Don’t ask your students to use any CAT that you haven’t previously tried on yourself.
• Allow for more time than you think you will need to carry out and respond to the assessment.
• Make sure to “close the loop.” Let students know what you learn from their feedback and how you and they can use that information to improve learning.

What is a Good CAT?

DIRECTIONAL – can help to confirm that teachers are on track

MEASURABLE – can show what has been learned or misunderstood

BENEFICIAL – benefits are of greater value than the effort to plan, conduct and collect data

http://www.eltcm.org/eltc/Download/symposium/workshop_B.pdf
Steps to Using CATs

Phase I: Planning a Classroom Assessment Project

Step 1: Choose the class in which to carry out the Classroom Assessment Project.

Step 2: Focus on an assessable question about student learning.

Step 3: Design a Classroom Assessment Project to answer that question.

Steps to Using CATs

Phase II: Implementing the Classroom Assessment Project

Step 4: Teach the target lesson related to the question being assessed.

Step 5: Assess learning by collecting feedback on that question.

Step 6: Analyze the feedback and turn the data into usable information.

Steps to Using CATs
Phase III: Responding to the results of the Classroom Assessment

Step 7: Interpret the results and formulate an appropriate response to improve learning.

Step 8: Communicate the results to students and try the response.

Step 9: Evaluate the Classroom Assessment Project’s effect(s) on teaching and learning.

CAT Checklist

1. Set clear goals – what to teach, how to test, and type of outcomes/data expected.
2. Do you need to modify CAT chosen? Check situation and numbers.
3. Do you grade or not grade CAT? Ungraded if for feedback.
4. Is CAT simple to plan, conduct, analyze?
5. What kind of response do you expect from learners?
   • Facts = scores
   • Concept = qualitative response

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CAT Checklist

6. Will you get the data you want?
7. Has someone else checked your CAT for validity?
8. Have you informed learners of purpose of CAT and shared data?
9. Have you collected and analyzed data?
10. What is your follow-up plan?

http://www.eltcm.org/eltc/Download/symposium/workshop_B.pdf
Basic Assumptions of Classroom Assessment

To improve their learning, students need to receive appropriate and focused feedback early and often; they also need to learn how to assess their own learning.

The type of assessment most likely to improve teaching and learning is that conducted by faculty to answer questions they themselves have formulated in response to issues or problems in their own teaching.

Classroom assessment does not require specialized training; it can be carried out by dedicated instructors from all disciplines.

Student learning outcomes for today’s workshop

After attending today’s workshop, you will be able to:

1. Describe what Classroom Assessment is
2. Provide reasons for using CATs
3. Identify various CATs
4. Apply CATs to your course(s).
Future Workshops

• Developing Rubrics
• “Closing the Loop” – Using Results to Enhance Student Learning
• WEAVEonline – online management tool
Assessment Cycle of Continuous Improvement
The loop represents the continuous nature of assessing student learning outcomes. Assessment is comprised of several steps. Click on any step to access information and resources on that topic.
Questions?

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Identify Student Learning Outcomes

Use Results

Assessment at NOVA

Curriculum Mapping

Gather Evidence

Methods of Assessment
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